Surgical Resection and Liver Transplantation for Hepatocellular Carcinoma

Mohamed E. Akoad, MD, Elizabeth A. Pomfret, MD, PhD*

KEYWORDS

• Hepatic resection • Liver transplantation • Hepatocellular carcinoma
• Living donor liver transplantation • Locoregional therapy • Downstaging

KEY POINTS

- Hepatic resection offers the best long-term outcome in patients without chronic liver disease and a diagnosis of hepatocellular carcinoma (HCC).
- Treatment options for patients with HCC and underlying cirrhosis include hepatic resection, liver transplantation, locoregional therapy, and chemotherapy.
- Hepatic resection in patients with cirrhosis is associated with a higher incidence of tumor recurrence.
- Liver transplantation offers the best long-term survival and the lowest incidence of tumor recurrence in patients with cirrhosis and early HCC.

HEPATIC RESECTION FOR HEPATOCELLULAR CARCINOMA

More than 80% of hepatocellular carcinoma (HCC) arises in the background of cirrhosis with an annual incidence of 1% to 6%. It is estimated, however, that 10% to 15% may arise in patients with normal livers.[1–4] The cause of HCC in patients with a normal liver is undetermined most of the time. In patients infected with hepatitis B virus, most cases of HCC arise in the setting of cirrhosis, yet 20% to 30% of HCC can develop in patients with normal livers. Rarely, HCC develops in patients with chronic hepatitis C without chronic inflammation or fibrosis. The presence of HCC is also associated with prolonged excessive alcohol intake, metabolic disease, and iron overload. Fibrolamellar HCC is an uncommon variant that typically develops in patients without chronic liver disease (**Fig. 1**). It has distinct radiologic and histologic characteristics and is not associated with an elevated alpha-fetoprotein (AFP) level.

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Department of Transplantation and Hepatobiliary Diseases, Lahey Hospital and Medical Center, 41 Mall Road, 4 West, Burlington, MA 01805, USA
* Corresponding author.
E-mail address: Elizabeth.A.Pomfret@lahey.org

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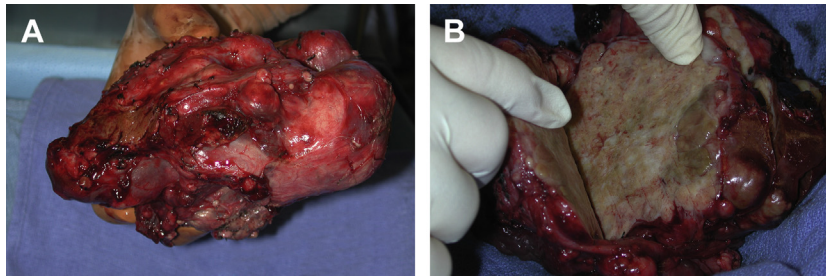

Fig. 1. Resected specimen of fibrolamellar HCC (*A, B*).

Fibrolamellar HCC develops in a younger age group (20–40 years) and has a slightly better prognosis.

Surveillance screening with serial imaging studies is not routinely done in patients without chronic liver disease, thus tumors in this population are often large in size (median size 8–10 cm), symptomatic, and require a major hepatic resection (Fig. 2). Unlike patients with chronic liver disease, hepatic resection is well tolerated and offers the best option for long-term survival.

HCC arising in the setting of chronic liver disease is often diagnosed at an earlier stage as a result of serial surveillance imaging studies. Treatment options depend on many factors, including size and number of lesions, cause of liver disease, the severity of hepatic dysfunction, and the presence of portal hypertension and cirrhosis.

Patient Evaluation

Patients with HCC referred for surgery are carefully evaluated to assess resectability based on anatomic considerations, underlying hepatic function, and the patients' overall medical condition. The success of a partial hepatectomy depends on the ability to achieve a complete resection with negative margins while leaving behind an adequate liver remnant.

Unlike most solid tumors whereby the prognosis and subsequent treatment options depend on the staging at the time of presentation, the prognosis and treatment

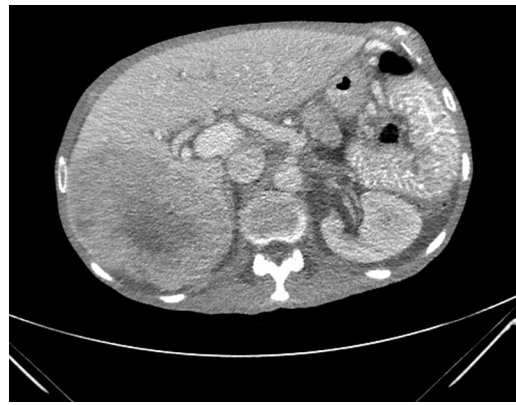

Fig. 2. A large HCC measuring 12 × 10 cm occupying most of the right lobe in a patient with no underlying cirrhosis.